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Claim Amendments:

Please amend the Claims as follows:

1-10. (Cancelled)

11. (Currently Amended) An injection system for injecting an injection fluid into a patient, the system comprising:

a pressurizing device for supplying injection fluid under pressure;

a low pressure fluid delivery system; and

a pressure isolation mechanism having a first port adapted for connection to the pressurizing device, a second port adapted for connection to the patient, and a third port adapted for connection to the low pressure fluid delivery system, the pressure isolation mechanism comprising a valve having a first state and a mutually exclusive second state, the first state occurring when the second and third ports are connected and the first and third ports are connected, and the second state occurring when the first and second ports are connected and the first and third ports are disconnected, the valve being normally biased to the first state and being switchable to the second state when fluid pressure from the pressurizing device reaches a predetermined pressure level, the first and second ports being connected in both the first and second states of the valve; and

an automated valve in line between the pressurizing device and the first port of the pressure isolation mechanism.

12. (Cancelled)

13. (Cancelled)

14. (Currently Amended) ~~The system of Claim 11~~ An injection system for injecting an injection fluid into a patient, the system comprising:

a pressurizing device for supplying injection fluid under pressure;

a low pressure fluid delivery system; and

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a pressure isolation mechanism having a first port adapted for connection to the pressurizing device, a second port adapted for connection to the patient, and a third port adapted for connection to the low pressure fluid delivery system, the pressure isolation mechanism comprising a valve having a first state and a mutually exclusive second state, the first state occurring when the second and third ports are connected and the first and third ports are connected, and the second state occurring when the first and second ports are connected and the first and third ports are disconnected, the valve being normally biased to the first state and being switchable to the second state when fluid pressure from the pressurizing device reaches a predetermined pressure level, the first and second ports being connected in both the first and second states of the valve;

wherein the low pressure fluid delivery system comprises a source of flushing fluid, a drip chamber in fluid connection with the source of flushing fluid and a detector to sense the amount of flushing fluid in the source of flushing fluid.

15. (Original) The system of Claim 14, further comprising a flushing fluid control valve and a bubble detector in line between the flushing fluid drip chamber and the pressure isolation mechanism.

16. (Original) The system of Claim 15 wherein the pressurizing device is in fluid connection with a source of injection fluid via an injection fluid drip chamber, the system further comprising a detector to sense the amount of injection fluid in the source of injection fluid.

17. (Previously Presented) The system of Claim 16 further comprising an injection fluid control valve and an air detector in line between the injection fluid drip chamber and the pressure isolation mechanism.

18. (Cancelled)

19. (Currently Amended) An injection system for injecting an injection fluid into a patient, the system comprising:

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a powered injector;  
a pressurizing chamber in operative connection with the powered injector;  
a fluid path in fluid connection with the pressurizing chamber and a source of injection fluid for supplying to the pressurizing chamber; ~~and~~  
a handheld controller comprising a first control having a first mode wherein flow rate of the injection fluid is directly proportional to the distance the first control is depressed, and a second mode wherein depression of the first control causes the powered injector to deliver a preprogrammed injection of injection fluid; and  
an automated valve associated with the fluid path and adapted to stop flow of injection fluid at any pressure and flow rate when no force is applied to the first control to deliver a sharp bolus of injection fluid.

20. (Previously Presented) The system of Claim 19 wherein the first mode is a low pressure mode.

21. (Previously Presented) The system of Claim 19 wherein the second mode is a high pressure mode.

22. (Previously Presented) The system of Claim 19 wherein the fluid path is in fluid communication with a source of flushing fluid, and the handheld controller further comprises at least a second control to control injection of flushing fluid.

23. (Cancelled)

24. (Currently Amended) ~~The system of Claim 11, further comprising~~ An injection system for injecting an injection fluid into a patient, the system comprising:  
a pressurizing device for supplying injection fluid under pressure;  
a low pressure fluid delivery system;  
a pressure isolation mechanism having a first port adapted for connection to the pressurizing device, a second port adapted for connection to the patient, and a third port adapted for connection to the low pressure fluid delivery system, the pressure isolation mechanism

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comprising a valve having a first state and a mutually exclusive second state, the first state occurring when the second and third ports are connected and the first and third ports are connected, and the second state occurring when the first and second ports are connected and the first and third ports are disconnected, the valve being normally biased to the first state and being switchable to the second state when fluid pressure from the pressurizing device reaches a predetermined pressure level, the first and second ports being connected in both the first and second states of the valve; and

a pressure transducer in fluid connection with the third port of the pressure isolation mechanism.

25. (Previously Presented) An injection system, comprising:  
a source of flushing fluid;  
a pump in operative connection with the source of flushing fluid;  
a flushing fluid valve in operative connection via a first port thereof with an outlet of the pump;  
a first connector in fluid connection with a second port of the flushing fluid valve;  
a source of contrast;  
a contrast valve in operative connection with the source of contrast via a first port of the contrast valve;  
a powered injector in operative connection with a second port of the contrast valve;  
a second connector in operative connection with a third port of the contrast valve;  
a pressure isolation mechanism having a lumen including a first port in fluid connection with the second connector and a second port in fluid connection with a patient catheter, the pressure isolation mechanism also having a third port in fluid connection with the lumen and with the first connector, the pressure isolation mechanism comprising a valve having a first state and a second state, the first state occurring when the lumen and the third port are connected, the second state occurring when the lumen and the third port are disconnected, the first port and the second port of the lumen being connected in the first state and in the second state, the valve being normally biased to the first state and being switchable to the second state

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when fluid pressure in the lumen from the powered injector reaches a predetermined pressure level; and

a pressure transducer in fluid connection with the third port of the pressure isolation mechanism.

26. (Previously Presented) The system of Claim 25, further comprising a first air detector in fluid connection between the flushing fluid valve and the first connector and a second air detector in fluid connection between the contrast valve and the second connector.

27. (Previously Presented) The system of Claim 25, further comprising a first drip chamber in fluid connection between the source of flushing fluid and the pump and a detector in operative connection with the first drip chamber to sense the amount of flushing fluid in the source of flushing fluid.

28. (Original) The system of Claim 27, further comprising a second drip chamber in fluid connection between the source of contrast and the contrast valve and a detector in operative connection with the second drip chamber to sense the amount of injection fluid in the source of injection fluid.

29. (Original) The system of Claim 25, further comprising a handheld controller to control injection of injection fluid and injection of flushing fluid.

30-50. (Cancelled)

51. (Previously Presented) The system of Claim 19 wherein the first control comprises a piston disposed within a chamber, and the piston is biased to an off position.

52. (Previously Presented) The system of Claim 19 wherein the first control controls flow rate in the first mode by changing the force thereon.

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53. (Previously Presented) The system of Claim 19 wherein the handheld controller is in operative connection with a fluid control module which is operatively connected to the powered injector.

54. (Currently Amended) The system of Claim 53 wherein the automated valve is associated with the fluid control module ~~comprises an automated valve adapted to stop flow of injection fluid at any pressure and flow rate when no force is applied to the first control to deliver a sharp bolus of injection fluid.~~

55. (Cancelled)

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